ABSTRACT

A digital 3D sound audio source is implemented for digital audio using interaural time delays formed from two delay lines: a first delay line providing a rough estimate of the desired interaural time delay for a particular audio sample, and a second delay line in series with the first delay line providing a more finely resolved delay. The use of the second delay line eliminates the need for conventional real-time interpolation techniques to provide the appropriate interaural time delay. In the disclosed embodiment, the first delay module, i.e., the integer delay module, is formed from a first-in, first-out (FIFO) buffer with appropriate selection control of a desired sample as it passes through the FIFO buffer with each clock cycle based on the sampling rate. The second delay module (i.e., the fractional delay module) is formed from a plurality of polyphase (FIR) filters. The number of polyphase filters is determined based on the desired resolution of the interaural time delay.